

ABSTRACT OF THE DISCLOSURE

A rotary electric machine includes a frame 20; a stator whose stator-slot number N_s is 12; a rotor whose rotor-pole number N_p is 8, the rotor disposed in a space inside the stator; and given that frame thickness $T(\theta)$ at mechanical angle θ , with respect to a reference line that connects the inner circumferential center of the frame with an arbitrary point other than the center, around the center is circularly expanded in the Fourier series and that the difference between the stator-slot number N_s and the rotor-pole number N_p is k ($= |N_s - N_p|$), stress-relieving spaces 201 and 202 provided in portions of the frame in an arrangement that does not have 90-degree mechanical angle rotational symmetry, in such a way that the sum P of inclusion ratios for the k -th component T_k and the N_p -th component T_{N_p} that are the Fourier series expansion coefficients for the frame thickness $T(\theta)$ expressed by equation 2

$$P = (T_k + T_{N_p}) / \sum_{n=0}^{\infty} T_n \times 100 [\%] \quad (2)$$

falls under 12%. According to this configuration, mechanical strength of the frame and its productivity are maintained, and cogging torque caused by magnetic-circuit distortion in an iron core generated due to the frame shape can be also reduced.